WESTBAY® RETROFIT WELL SUMMARY

Location ID: BLM-36

Field Representatives: M. Rivera, M. Canavan, J. Pearson, G. Giles, and L. Hunnicutt-Mack

Purpose of Well: To replace the failed BLM-33 well within the Mid-Plume Constriction Area (MPCA). To further define the vertical and contaminent aquifer characteristics within the MPCA.

Date Started: 1/19/99 **Date Completed:** 5/18/99

Northing: 228442.35 **Easting:** 407940.65

Brass Cap: 4638.62' **Outer Casing:** 4639.40' **Inner Casing:** 4639.76' (GPS)

Drilling Method: Mud rotary

Drilling Contractor: Stewart Brothers Drilling Company **Driller:** Juan Aguilar

Total Depth Borehole: 960' **Diameter Borehole:** 12.25" to 105'; Reamed to 17.5" to 100';12.25" to 960'.

Total Depth Surface Casing: 100' **Diameter Surface Casing:** 14" OD

Total Depth Conv. Well Casing: 905' **Diameter Conv. Well Casing:** 4.5" OD

Total Depth 1.5" OD Westbay® Casing: 885'

Water First Detected: Not detected while drilling. **Water Level Open Borehole:** 320' (from geophysical log)

Water Level Conv. Cased Borehole (post-development SS): 492.31' **Estimated Water Use** (pre-development): 92,800 gallons

Sampling Zones

Screened Zone	Sand Pack	Westbay® Zone (packer to packer)	Meas. Port Depth
343.47' to 353.49'	339' to 360'	340' to 360'	350'
603.91' to 614.00'	599' to 620'	600' to 620'	610'
794.31' to 804.40'	788' to 812'	790' to 810'	800'
854.51' to 864.60'	847' to 870'	850' to 870'	860'

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Conventional Well Casing Used

Diameter: 4.5" OD **Stainless Steel Type:** 304

Schedule 5

5-foot: _____ = _____ ft

10-foot: _____ = _____ ft

20-foot: _____ = _____ ft

Total Sch 5 Footage = _____ ft

Total Footage of Blank Risers: 865' ft

Schedule 10

5-foot: 1 = 5 ft

10-foot: 2 = 20 ft

20-foot: 42 = 840 ft

Total Sch 10 Footage = 865 ft

Stick-Up: 2.54 ft originally. Cut to 1.3 ft 8/99. Final stick-up (from brass cap) = 0.78 ft.

Screen Used

Diameter: 4.5" OD **Slot Size:** 0.020" **Stainless Steel Type:** 304

400-600-ft Depth Rating

5-foot: _____ = _____ ft

10-foot: 1 = 10 ft

20-foot: _____ = _____ ft

600-1000-ft Depth Rating

5-foot: _____ = _____ ft

10-foot: 3 = 30 ft

20-foot: _____ = _____ ft

Total Footage of Screen: 40

Annular Materials

Sand, grade 30/70
50-lb. Bags : 16
100-lb. Buckets: _____

50-lb Bags Bentonite Pellets: 86

94-lb. Bags Cement: 67

Sand, grade 10/20
50-lb. Bags: 564
100-lb. Buckets: _____

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Westbay® Casing Used:

10-foot: 74 = 740 ft

5-foot: 17 = 85 ft

2-foot: 1 = 2 ft

Packer: 12 = 60 ft Total Footage: 887 ft

Regular Couplings: 86 Well Depth: 885 ft

Pumping Ports: 4 Stick-Up: 2 ft joint. 0.3 ft above stainless steel 8/99. Final stick-up (from brass cap) = 1.14 ft.

Measurement Ports: 12

End Caps: 1

Magnetic Collars: 4

Pertinent Field Notes

For more detail, refer to Field Notebook # MPCA Phase 2 Well Installation Notebooks Oct. 26,1998 through Feb. 9, 1999: Book 1, pages 75-93, Book 2, pages 1-8.
Westbay® Installation: See notebook labeled: WW-2, BLM-34, BLM-36

1/19/99 Rigged up and hauled water to mix mud- M. Canavan.

1/20/99 Mixed mud and drilled to 36'. (12.25" hole)- J. Pearson.

1/21/99 Drilled to 76' and shut down rig due to high winds- J. Pearson.

1/22/99 Drilled to 100'. Tripped out and prepared to ream 17.5" hole. Note: rig transmission blew out and needed to be replaced- M. Rivera.

1/23/99 Replaced transmission and reamed to 100'- M. Rivera.

1/24/99 Tripped out of borehole and set 14" outside diameter (OD) surface casing- M. Rivera.

1/25/99 Drilled 12.25" hole to 240'- M. Rivera.

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1/26/99	Drilled to 400'- J. Pearson.
1/27/99	Drilled to 590'- J. Pearson.
1/28/99	Drilled to 706'- J. Pearson.
2/2/99	Transmission replaced over break. Drilled to 820'- M. Rivera.
2/3/99	Drilled to 850' and tripped completely out of borehole to check drill bit- M. Rivera.
2/4/99	Drilled to 930'- J. Pearson.
2/5/99	Drilled to 960' (T.D.). Ran e-log, drift, and sonic log- J. Pearson.
2/6/99	Finished geophysical logging of BLM-36. Tripped in tremie pipe- M. Rivera.
2/7/99	Installed 4.5" OD stainless steel well and tagged it at 907.53'- M. Rivera.
2/8/99	Filled annular materials past bottom screen to 846'- G. Giles and M. Rivera.
2/9/99	Filled annular materials to 695' past second from bottom screen- G. Giles.
2/10/99	Filled annular materials to 451' past the third from bottom screen- G. Giles and J. Pearson.
2/11/99	Filled annular materials to 342'- J. Pearson.
2/16/99	Filled annular materials to 210' and cemented to 148'- M. Rivera.
2/17/99	Cemented to surface and moved rig to another well pad- M. Rivera.
3/5/99-3/6/99	Bailed about 936 gallons from BLM-36. Water is very dirty with brown to black color and sulphurous odor- J. Pearson and M. Rivera.
3/18/99-3/20/99	Swabbed 50 gallons from screen #2 and then it went dry, swabbed 1,650 gallons from screen #3, swabbed 2,100 gallons from screen #4. Water still colored black to green with no smell- M. Rivera.
3/21/99	Pumped 160 gallons from entire well before it dried up- G. Giles.
3/22/99	Jetted screens to clear off bentonite- G. Giles and M. McClure.

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3/24/99-	Pumped 23,141 gallons from well. Water becoming slightly cleaner.
4/29/99-	"Floaters" are present within the water. Suspect a bacterial growth problem- J. Pearson.
5/4/99- 5/7/99	Camera logged BLM-36 before Westbay® well installation. Camera log revealed abundant detritus floating within the well. Furthermore, screens appeared relatively dirty with drilling mud and bacterial growth. Decided to wash the well with well K water, however there was still abundant detritus floating within the well. Decided to abandon Westbay® installation until after BLM-36 was furthered developed. Flushed 32,000 gallons of Well K water down the borehole- G. Giles.
5/8/99- 5/10/99	Installed low-flow pump and pumped continuously for 12 hours/day. Pumped 9,220 gallons of water. Removed water cleared up to 30 ntu's. Prepared for Westbay® installation- M. Rivera, L. Hunnicutt-Mack and M. McClure.
5/12/99	Installed 225' of Westbay® MP 38 1.5" OD PVC casing and pressure tested each joint- M. McClure.
5/13/99	Completed installation of Westbay® well casing with 1.6' of stick-up. Inflated two packers, the 2nd and 3rd from bottom. Missed the bottom packer- L. Hunnicutt-Mack and M. McClure.
5/14/99	Inflated packers 4, 5, 6 and 7- L. Hunnicutt-Mack.
5/17/99	Surface tested inflation tool at 395-400 psi. Partially inflated bottom packer and broke the packer inflation arm on the way up. Quit for the day at 1315 hours because gauge broke on the pressure control unit- M. McClure.
5/18/99	Completed inflation of packers 8 and 9. Westbay® Well BLM-36 installation complete. Awaiting development- G. Giles and M.Dunford.